Status and prospects of backyard fish/shellfish hatcheries in Vietnam

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Ghent - Belgium
Shrimp culture area and production in Vietnam

Culture area (ha)

Production (tonne)

- Culture area - VN (ha)
- Culture area - MD (ha)
- Production - VN (tonne)
- Production - MD (tonne)
Status of shrimp culture in 2009

- **Culture area**: 596,000 ha (97% Penaeus monodon, 3% Litopenaeus vannamei)
- **Production**: 380,000 tonnes (74% Penaeus monodon, 26% Litopenaeus vannamei)
- **Farm gate price (USD/kg)**: 5.9 (Penaeus monodon), 3.1 (Litopenaeus vannamei)
- **Value**: USD 1,953 mil (84% Penaeus monodon, 16% Litopenaeus vannamei)
- **Productivity (kg/ha)**: 483 (Penaeus monodon), 6,250 (Litopenaeus vannamei)
Backyard hatchery development in Vietnam

- Developed along with the development of shrimp culture in Vietnam, especially in Mekong Delta.
- Started from 1984 around Qui Nhon and Nha Trang after the establishment of FAO hatchery in Qui Nhon 1982.
- Increased dramatically from 16 hatcheries (3.3 million PL) in 1986 to the peak of 5.094 hatcheries (25.9 billion PL) in 2004.
No and production of shrimp hatcheries

<table>
<thead>
<tr>
<th>Hatchery No</th>
<th>No of PL in bil.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>5000</td>
</tr>
<tr>
<td>35</td>
<td>6000</td>
</tr>
<tr>
<td>5000</td>
<td>25</td>
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<tr>
<td>4000</td>
<td>15</td>
</tr>
<tr>
<td>3000</td>
<td>10</td>
</tr>
<tr>
<td>2000</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
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Estimated data to the end 2009

- No of hatcheries
- Hatchery production (bil PL)
Status of shrimp hatchery in 2009

- Total demand: 45 bil PL
- Total production: 23 bil PL
- Hatchery productivity (mil PL)

Penaeus monodon vs Litopenaeus vannamei

- Total 3.377 hatcheries
- 15%: Penaeus monodon
- 85%: Litopenaeus vannamei
Features of shrimp backyard hatchery

Backyard (small-scale) hatcheries are most popular in fish/shellfish seed production in Vietnam, especially in black tiger shrimp seed production.
Technical features of shrimp backyard hatchery

Culture system

Mainly flow-through (with sand filter or/and chlorination), some start using recirculating system (only in Mekong Delta)
Technical features of shrimp backyard hatchery

Diagram of a recirculating system in a shrimp hatchery

- Plastic substrate
- Water current
- Airwater lift
- Aeration
- Water pump
- Water valve
- UV Ultraviolet lamp
- Trickling biofilter
- Submerged biofilter (3 compartments)
- Protein skimmer
- Rearing tank (4 tanks)
- Seawater
- Ozone
- Screening net
- Gravel and coral
- Sand
- Activated coal
- UV
- Tikkling bi filter
- (3 compartments)
<table>
<thead>
<tr>
<th>Year</th>
<th>Feeding</th>
<th>Pathogenic control</th>
<th>Survival of PL (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-1990</td>
<td>Live (natural stock) algae &amp; egg yolk-shrimp custard</td>
<td>None</td>
<td>10-25</td>
</tr>
<tr>
<td>1995-2000</td>
<td>Stop using live algae, only using dry algae &amp; formulated feed</td>
<td>Antibiotics</td>
<td>40-50</td>
</tr>
<tr>
<td>Since 2000</td>
<td>Tending to use live (cultured stock) algae again mainly <em>P. vannamei</em></td>
<td>Probiotics</td>
<td>40-70</td>
</tr>
</tbody>
</table>
Present status of shrimp backyard hatcheries

- Reducing PL production & number of backyard hatcheries
- Diversifying in species
- Reducing selling price
Macrobrachium hatchery

- Starting from 1985 with a FAO hatchery project in Vung Tau.

- Mainly developed in Mekong Delta in freshwater area from 2002.

- Using brine (~100 ppt) shipped from salt-farms to dilute to brackish water of 12 ppt.

- Most using green water systems. Some using recirculating systems.
Spotted Babylon hatchery

- Seed production started after year 2000 in Central Vietnam

- Number of hatcheries has increased from 2004-2005

- Most of Spotted Babylon hatcheries were modified from shrimp hatcheries
Mudcrab hatchery


- In 2009, 50% of total 800 shrimp hatcheries in Camau have switched to crab seed production or integrated produced both monodon PL and mudcrab

  - Survival from Zoae1 to Crab1 was 7.68% (5-11%)
  - Production capacity: 0.6 ± 0.5 million crablet/hatchery/year
Finfish hatchery

- Finfish seed production in VN is still in initial stage due to slow development of finfish culture
- Hatcheries mainly work with Asian seabass (Baramundi)
- Number of hatcheries of finfish has not reported yet.
Future prospects

Due to flexibility of backyard hatcheries, there are still rooms for development:

- Applying higher technology and biosecurity to increase the PL quality.
- Diversify in species to reduce seasonal/crop dependence, e.g. crab/shrimp hatcheries in Ca Mau.
- Integrating with big commercial hatcheries as satellite PL producers, especially, for broodstock sources:
  - Domesticated black tiger shrimp has been introduced to Vietnam for commercial production (from 2008)
  - Domesticated white-leg shrimp broodstock
- Gathering into cooperatives or companies to increase production and sales
- Practicing for certification, i.e. GAP, BAP, BMP
Thanks for your attention